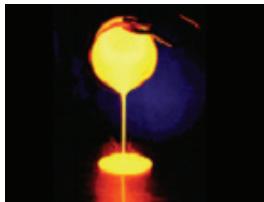




Actinide Removal Project- Good Practices and Lessons Learned



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Actinide Removal Project Lessons Learned

- Background
- Scope
- Lessons Learned
 - Legacy Facilities and Equipment
 - Communication Practices
 - Fast tracked projects

Actinide Removal Project: Background

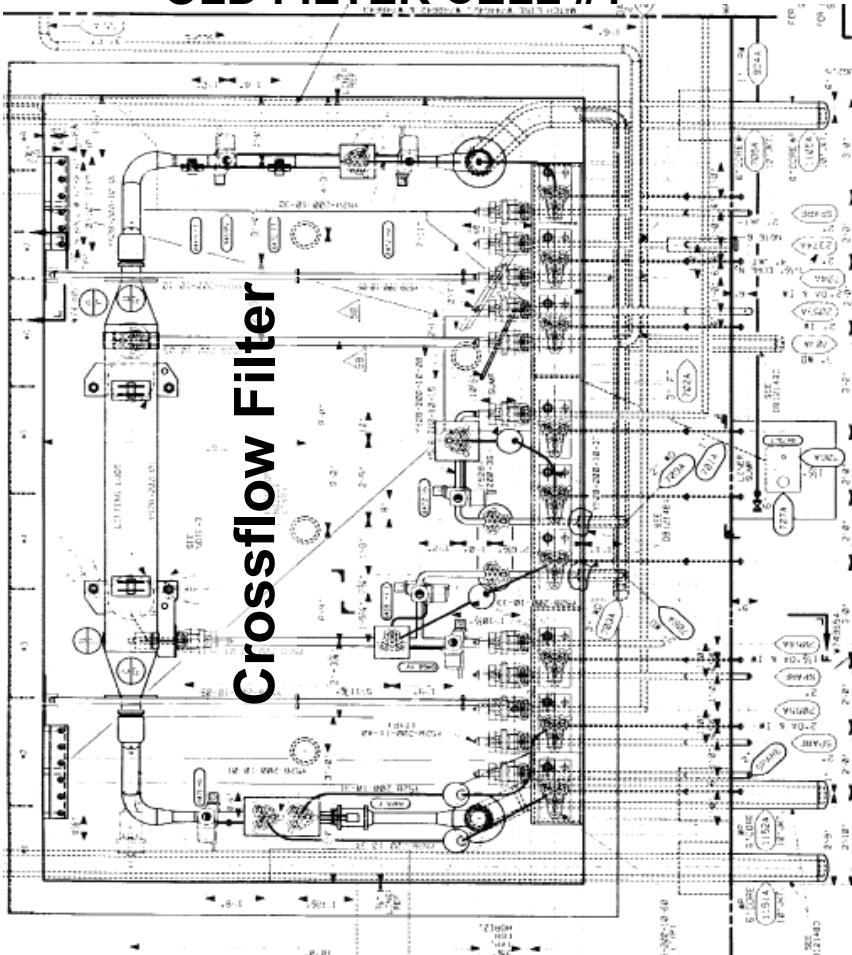
- Original process added Monosodium Titanate (MST) sorbent to a 1M gal underground tank
- Treated slurry was filtered at 241-96H
 - Decontaminated solution separated for LLW grout
 - Concentrated solids washed at downstream facility (512-S) for eventual HLW vitrification
- Process was not run due to safety concerns with cesium removal method
- Sorption and filtration has remained the baseline flowsheet for actinide removal

Actinide Removal Project: Scope

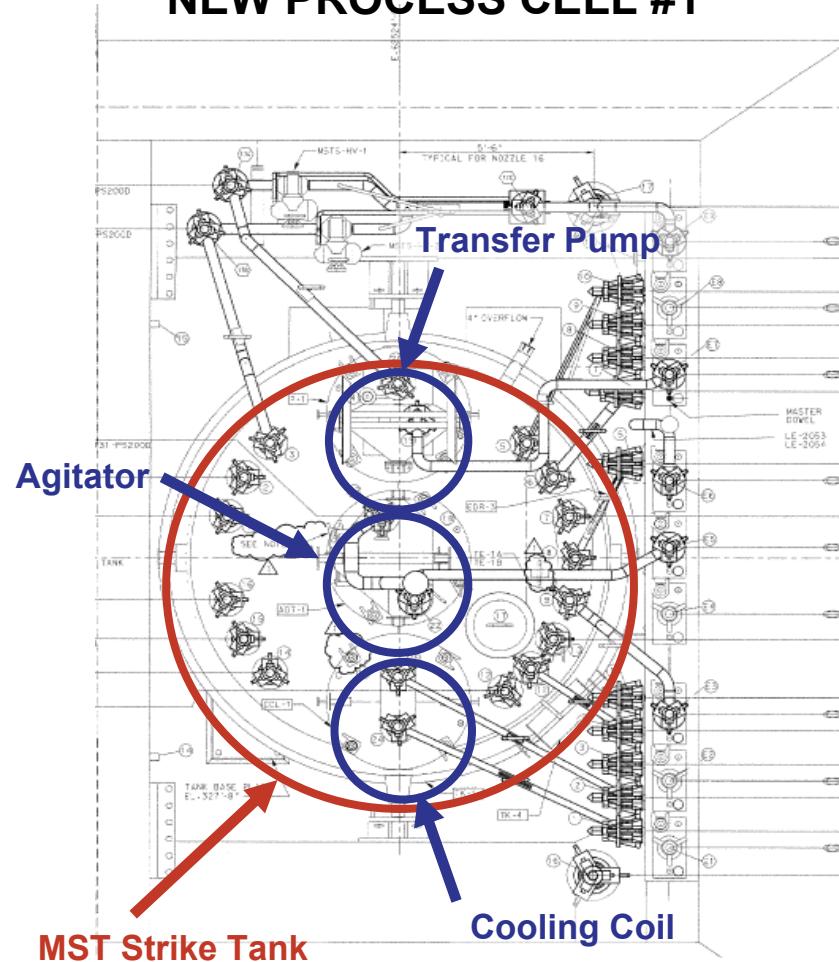
- D&R old filtration equipment from 241-96H
- Install two 6k gal tanks for chemical adjustment and treatment
- Restore building support systems to operable status after ~10 years out of service
- Provide new transfer infrastructure for modified process

Actinide Removal Project: Scope

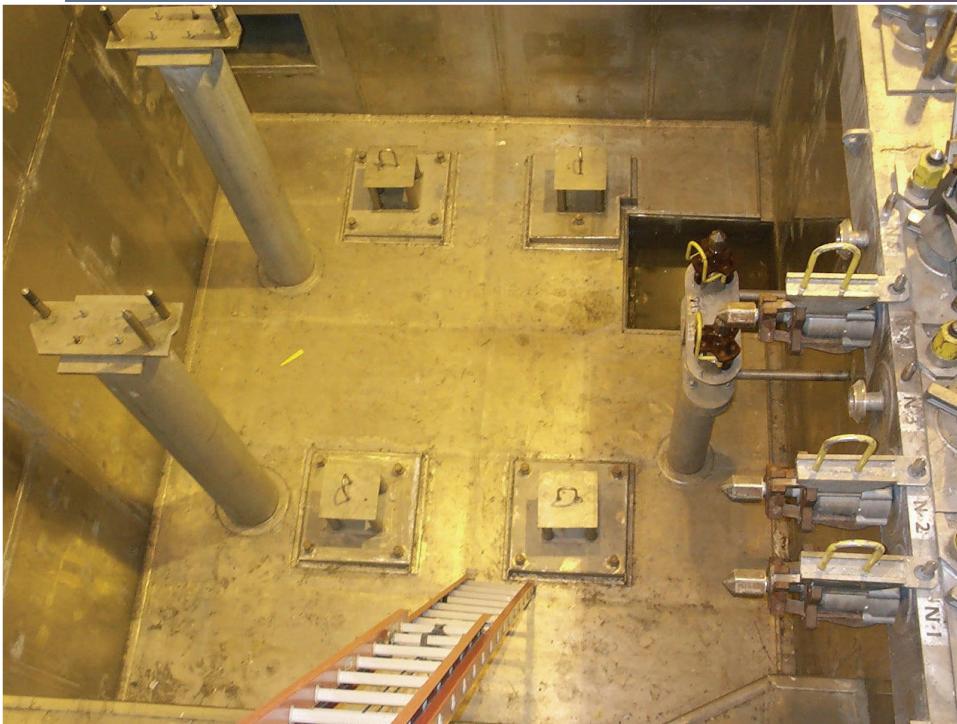
OLD FILTER CELL #1



NEW PROCESS CELL #1

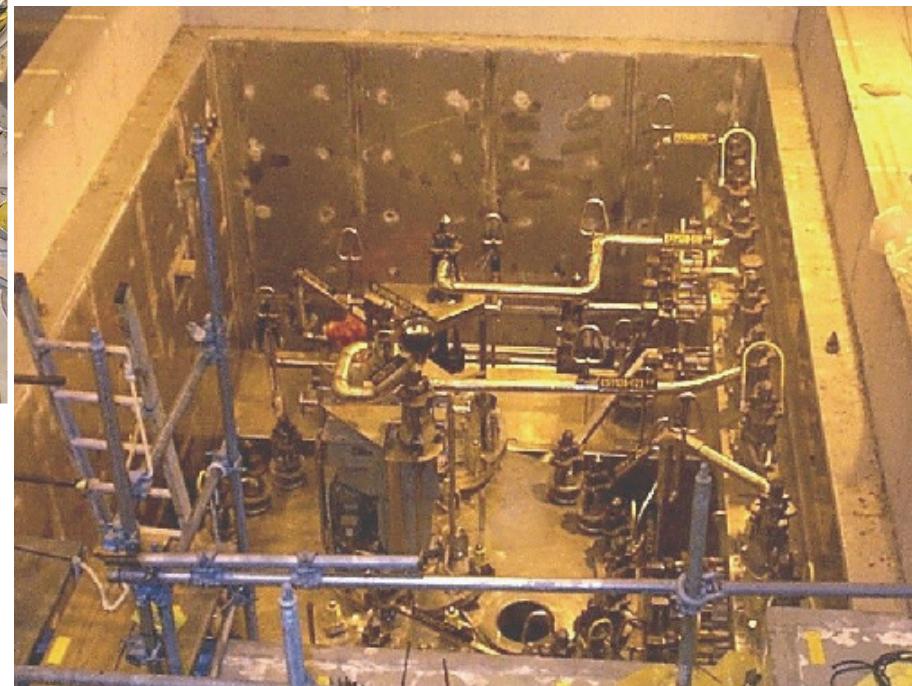


Actinide Removal Project: Scope

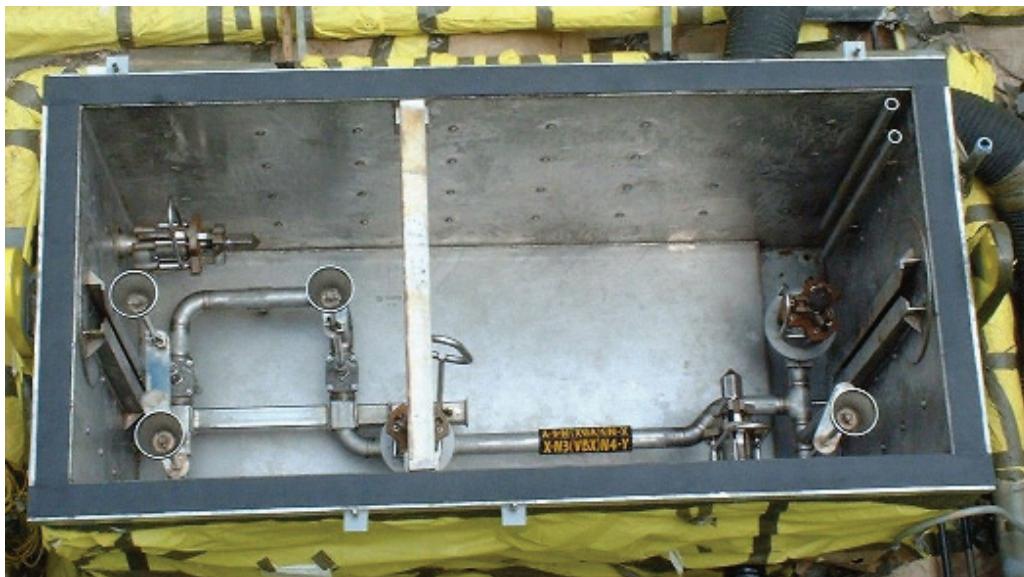


OLD FILTER CELL #1

NEW PROCESS CELL #1



Actinide Removal Project: Scope



96H Valve Box w/
Jumper

96H Valve Box Above
Grade



ARP Lessons Learned: Legacy Facility/Equipment

- **Unknown condition of facility**
 - Facility expected project to correct legacy issues with existing systems
 - Some systems assumed to be operable required repair/replacement, which increased project scope
 - New policies or programs may have ‘bypassed’ the existing facility (labeling, component tracking)
 - As-built configuration indeterminate based on existing documentation, extensive field work needed to determine state of facility

ARP Lessons Learned: Legacy Facility/Equipment

- **Re-use of existing equipment**
 - Determining current condition and operability is difficult, and critical (agitator corroded bearings)
 - Surplus equipment is rarely sized perfectly for application (512S chiller)
 - Unknown legacy problems may exist (agitator oil leak)

ARP Lessons Learned: Communication

- **Use of Design Services**
 - Co-location of Design Services with Design Authority improves design and co-ordination
 - Weekly meetings to identify and solve problems
 - Shortens review and comment incorporation cycles
 - Subcontracting design work requires heightened emphasis on communication to achieve good results (chiller system)
 - Physical separation between DS and DA
 - Need full and engaged participation at team meetings
 - Final design did not provide for maint/ops access

ARP Lessons Learned: Communication

- Human Performance (PVV)
 - Lead Design Engineer left project without good turnover
 - PVV calculations used inadequate pressure drop assumptions giving a less conservative design
 - Fan size insufficient to pull necessary vacuum on tanks

ARP Lessons Learned: Fast Tracked Projects

- **Parallel work**
 - In order to reduce schedule durations, design was often performed and reviewed in parallel. Multiple impacts when changes required.
- **Commercial Design Practice in Nuclear Facility**
 - Used in favor of Nuclear practice to shorten schedule. Most work groups unfamiliar with such practices which significantly offset potential benefits.

ARP Lessons Learned: Fast Tracked Projects

- **Acceptance of existing baseline**
 - Constructed a new jumper for valve box based on existing as-built data
 - Bypassed opportunity to measure nozzle locations in field
 - Final jumper was not leak-tight, requiring rapid response by project to rework the jumper to fit.

ARP Lessons Learned: Summary

- Caveat Emptor when accepting the re-use of existing facilities and equipment. Early determination of field configuration and system operability is important.
- Communication between design services and system engineers is critical for quality output and can save time.
- Parallel activities can save time, but associated re-work costs can be significant
- Make sure non-routine work practices are understood prior to implementation

ARP Lessons Learned: Summary

- Questions?
- Contact information:

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